**Montana Board of Oil and Gas Conservation**
**Environmental Assessment**

**Operator:** Whiting Oil and Gas Corporation
**Well Name/Number:** State 21-28H
**Location:** NE NW Section 28 T25N R57E
**County:** Richland **, MT; Field (or Wildcat)** W/C (Bakken Horizontal)

## Air Quality

(possible concerns)
Long drilling time: No, 30 to 40 days drilling time.
Unusually deep drilling (high horsepower rig): No, triple derrick drilling rig to drill a single lateral Bakken Formation well, 19,910'MD/10,488'TVD.
Possible H2S gas production: Yes possible H2S, slight.
In/near Class I air quality area: No Class I air quality area.
Air quality permit for flaring/venting (if productive) Yes, DEQ permit if productive and if there are no gas lines in the area and gas will have to be flared.

Mitigation:
__ Air quality permit (AQB review)
__ Gas plants/pipelines available for sour gas
__ Special equipment/procedures requirements
__ Other:

Comments: No special concerns – using triple derrick drilling rig to drill a single lateral Bakken Formation well, 19,910'MD/10,488'TVD.

## Water Quality

(possible concerns)
Salt/oil based mud: Yes, oil based invert mud system will be used for drilling the mainhole and saltwater for drilling the horizontal lateral. Freshwater and freshwater mud system will be used for drilling the surface hole.
High water table: No, no high water table anticipated.
Surface drainage leads to live water: No, nearest drainages are all unnamed ephemeral tributary drainages to North Fork First Hay Creek, about 1/16 of a mile to the east and about 3/8 of a mile to the northwest from this location. They drain into stock reservoirs in North Fork First Hay Creek northeast from this location.
Water well contamination: None, closest water wells are about 3/8 of a mile to the west, about 5/8 of a mile to the west, about 5/8 of a mile to the north, about ¾ of a mile to the east, about ¾ of a mile to the southeast and about ¾ of a mile to the southwest from this location. Depth of these water wells are 818' and less. Surface hole will be drilled with freshwater and freshwater mud to 2000'. Steel surface casing will be run and cemented from 2000'.
Porous/permeable soils: No, sandy clay soils.
Class I stream drainage: No Class I stream drainages.

Mitigation:
X Lined reserve pit
X Adequate surface casing
__ Berms/dykes, re-routed drainage
__ Closed mud system
__ Off-site disposal of solids/liquids (in approved facility)

__ Other: _____
Comments: 2000' of surface casing cemented to surface adequate to protect freshwater zones and will cover the base of the Fox Hills Formation.

**Soils/Vegetation/Land Use**

(possible concerns)
Steam crossings: No, stream crossings anticipated.
High erosion potential: No, moderate cut, up to 14.2' and small fill, up to 9.9', required.
Loss of soil productivity: None, location to be restored after drilling well, if well is nonproductive. If productive unused portion of drillsite will be reclaimed.
Unusually large wellsite: No, a large location, 440'X400' location size required.
Damage to improvements: Slight, surface use is a grass land.
Conflict with existing land use/values: Slight

Mitigation
__ Avoid improvements (topographic tolerance)
__ Exception location requested
_X_ Stockpile topsoil
__ Stream Crossing Permit (other agency review)
_X_ Reclaim unused part of wellsite if productive
__ Special construction methods to enhance reclamation
__ Other _____

Comments: Access to location will be over existing county road, #340. A short access of 293' will be built off the county road into this location. Oil based invert drilling fluids will be recycled. Completion fluids will be hauled to North Dakota to be used on other wells or hauled to a Class II Disposal. Drilling cuttings and mud solids will be fly ashed in the lined pit and buried with subsoil cover. No special concerns.

**Health Hazards/Noise**

(possible concerns)
Proximity to public facilities/residences: Residences about 5/8 mile to the west and ¾ of a mile to the east from this location. A church, St. Peters is about 1.75 miles to the east on county road 138 from this location. Landing strip about 2 miles to the south from this location.
Possibility of H2S: Slight possibility of H2S.
Size of rig/length of drilling time: Triple drilling rig/short 30 to 40 days drilling time

Mitigation:
_X_ Proper BOP equipment
__ Topographic sound barriers
__ H2S contingency and/or evacuation plan
__ Special equipment/procedures requirements
__ Other:_____

Comments: Adequate surface casing and operational BOP equipment should mitigate any problems. No concerns

**Wildlife/recreation**

(possible concerns)
Proximity to sensitive wildlife areas (DFWP identified): None identified.

Proximity to recreation sites: ___None identified_____
Creation of new access to wildlife habitat: No ___
Conflict with game range/refuge management: _No ___
Threatened or endangered Species: __Species identified as threatened or endangered are the Pallid Sturgeon, Interior Lease Tern, Whooping Crane and Piping Plover. Candidate species are the Greater Sage Grouse and the Sprague's Pipit. MTFWP Natural Heritage Tracker website indicates one (1) species of concern is Whooping Crane. ____ __

Mitigation:
__ Avoidance (topographic tolerance/exception)
_X Other agency review (DFWP, federal agencies, DSL)
__ Screening/fencing of pits, drillsite
__ Other:_____
Comments: ___ State of Montana Trust surface lands. Trust Lands will do surface EA.

**Historical/Cultural/Paleontological**

(possible concerns)
Proximity to known sites __None identified_____

Mitigation
__ avoidance (topographic tolerance, location exception)
_X other agency review (SHPO, DSL, federal agencies)
__ Other:_____
Comments: __State of Montana Trust surface lands. Trust Lands will do surface EA.

**Social/Economic**

(possible concerns)
__ Substantial effect on tax base
__ Create demand for new governmental services
__ Population increase or relocation
Comments: _____Wildcat well, no concerns.

**Remarks or Special Concerns for this site**

_No special concerns or remarks.

**Summary: Evaluation of Impacts and Cumulative effects**

No significant long term impacts expected, some short term impacts will occur.

I conclude that the approval of the subject Notice of Intent to Drill (does/**does not**) constitute a major action of state government significantly affecting the quality of the human environment, and (does/**does not**) require the preparation of an environmental impact statement.

Prepared by (BOGC): /s/Steven Sasaki
(title:) Chief Field Inspector
Date: December 2, 2011

Other Persons Contacted:

Montana Bureau of Mines and Geology, GWIC website
(Name and Agency)
Water wells in Richland County
(subject discussed)
November 19, 2011
(date)

US Fish and Wildlife, Region 6 website
(Name and Agency)
ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES MONTANA COUNTIES, Richland County
(subject discussed)

November 19, 2011
(date)

Montana Natural Heritage Program Website (FWP)
(Name and Agency)
Heritage State Rank= S1, S2, S3, T25N R57E
(subject discussed)

November 19, 2011
(date)

If location was inspected before permit approval:
Inspection date: _____
Inspector: _____
Others present during inspection:_____